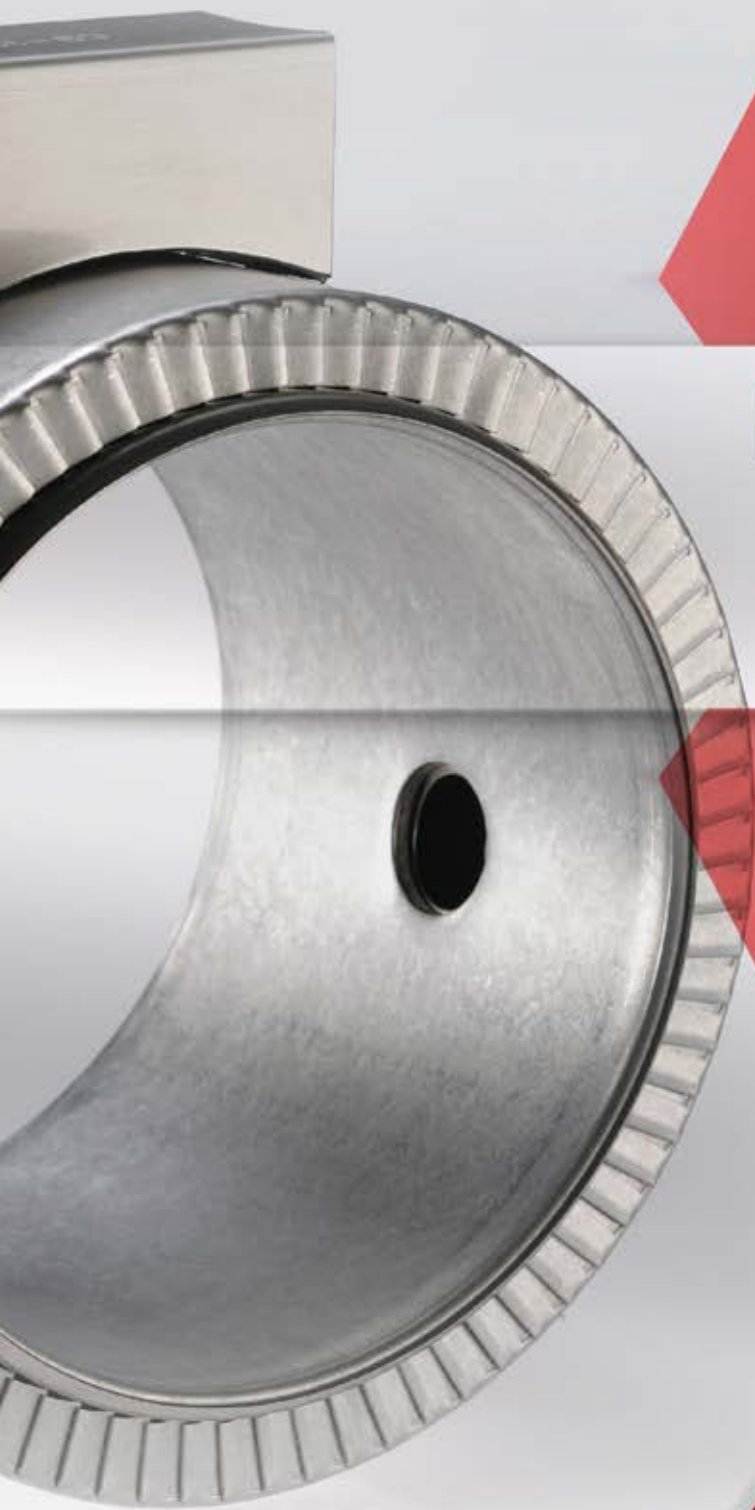




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gretje / regulacija / svetovanje
heating / controlling / consulting



Supporting industry since 1963



Priročnik za grelce Heater Handbook



KAKO NAROČITI
GRELEC
HOW TO ORDER



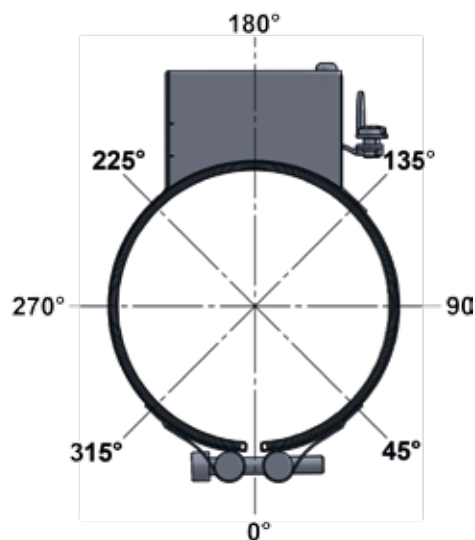
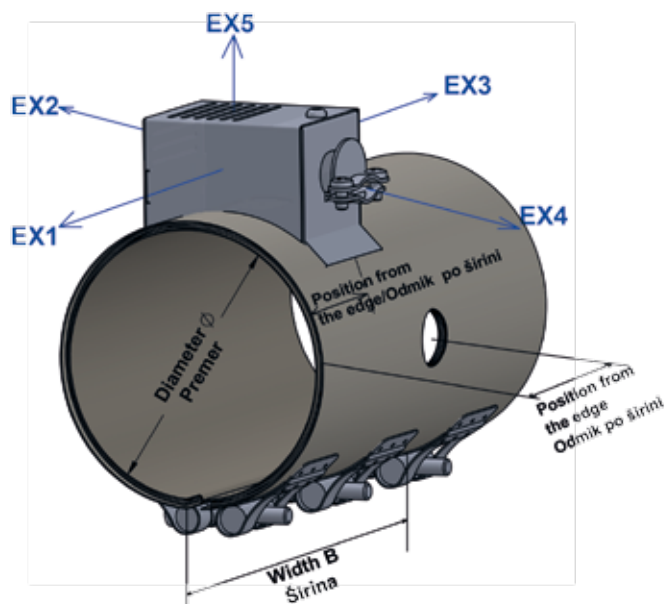
1. KAKO NAROČITI GRELEC GM.12 GM.50 GM.60

Prosimo, navedite pozicijo električnih priključkov in lukenj, v obliki stopinj. Pri tem naj bi imel grelec spajanje (španer) pri 0°. Določiti je potrebno tudi pozicijo luknje in priključka glede na širino grelca. Prosimo, uporabite ustrezne predlogo (Slika1).

1. HOW TO ORDER GM.12 GM.50 GM.60

Please indicate the location of electrical connections and holes in the form of degrees. When doing so, the heater clamping system should be assumed to be at 0°. The location of holes and connections should also be indicated in relation to the width of heater. Please use the appropriate template. (Drawing1).

Slika1/Drawing1



Tip grelca/Model:

Premjer Ø/Diameter Ø:

Širina B/Width B:

Napetost V/ Voltage V:

Moč W/Wattage W:

Vezava/El. Connection:

Priključna škatla/Connection box:

Tip škatle(glej brošuro)/Type: (see brochure connections):

Odmik priključka po obodu/Position in degrees:

Odmik priključka po širini/Position from the edge:

Smer priključka/Cable direction:

Dolžina kabla/Cable lenght:

Luknje in izbitine/Holes and cutouts:

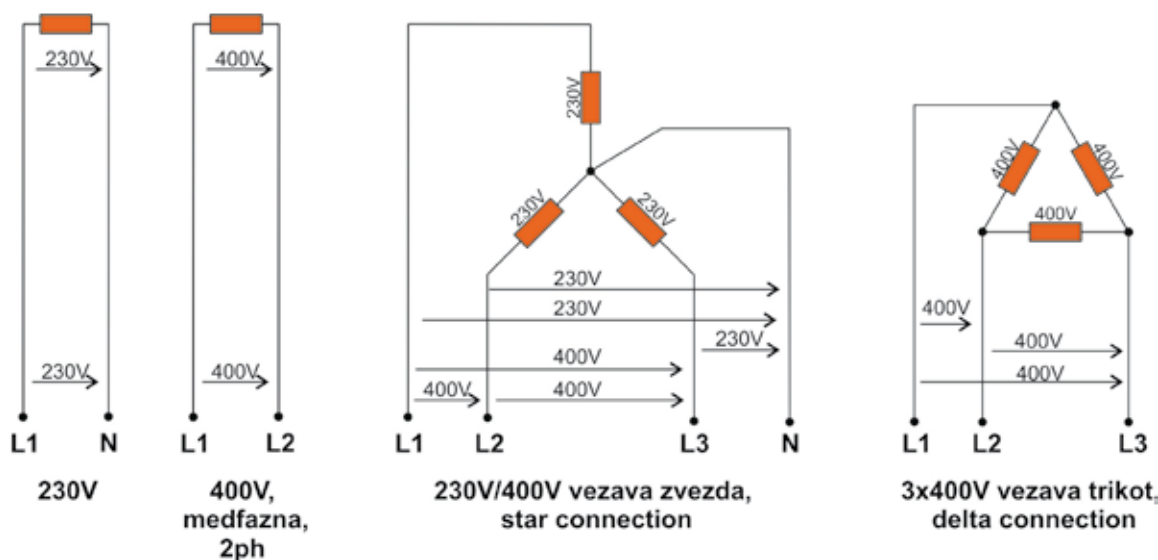
Premjer luknje Ø/Hole diameter Ø:

Odmik luknje po obodu/Position in degrees:

Odmik luknje po širini/Position from the edge:

Nosilec sonde/TC Holder:

Dodatna temperaturna izolacija: DA / NE/Additional thermal insulation:



Najenostavneje je grelec naročiti prek našega spletnega konfiguratorja/The easiest way to order heater, is to subscribe on our WEBSHOP.

2. KAKO NAROČITI GRELEC / TIP GM.55, GM.65

2. HOW TO ORDER / TYPE GM.55, GM.65

Tip grelca/Model:

Dolžina A/Lenght A:

Širina B/Width B:

Napetost V/Voltage V:

Moč W/Wattage W:

Priključna škatla/Connection box:

Tip škatle(glej brošuro)/Type: (see brochure connections)

Odmik priključka po dolžini/Position from the edge Lenghtside

Odmik priključka po širini/Position from the edge Widthside

Smer priključka/Cable direction:

Dolžina kabla/Cable lenght:

Luknje in izbitine/Holes and cutouts

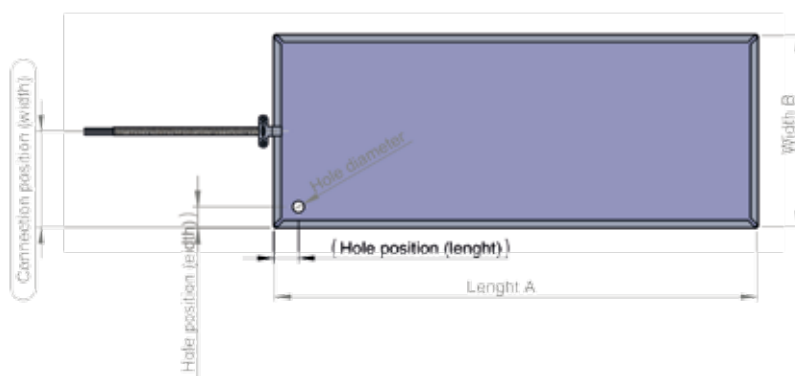
Premer luknje Ø/Hole diameter Ø:

Odmik luknje po dolžini/Position from the edge Lenghtside

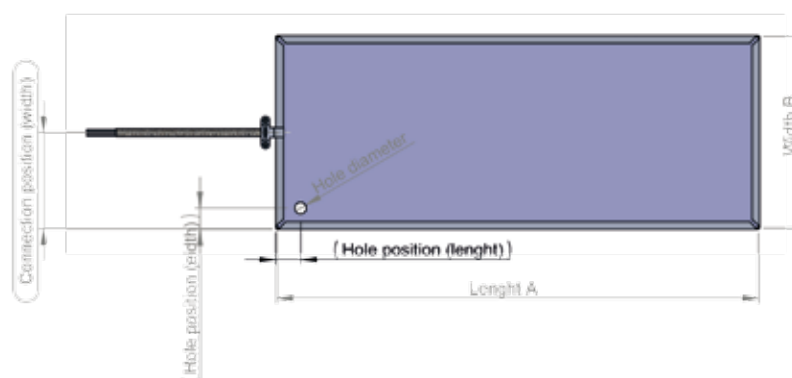
Odmik luknje po širini/Position from the edge Widthside

Nosilec sonde/TC Holder

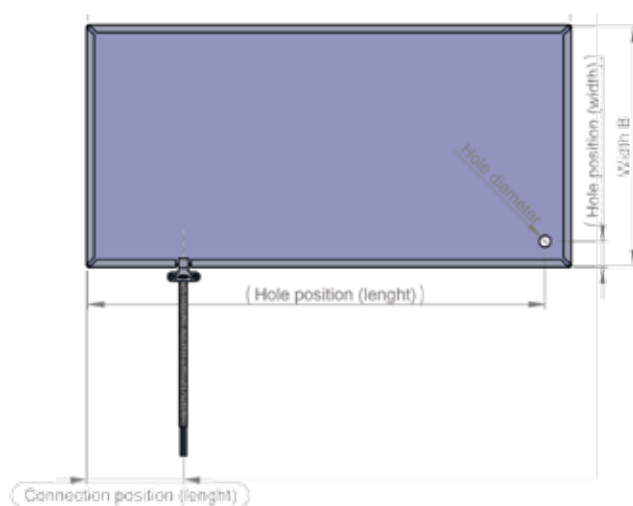
CT-502



CT-504



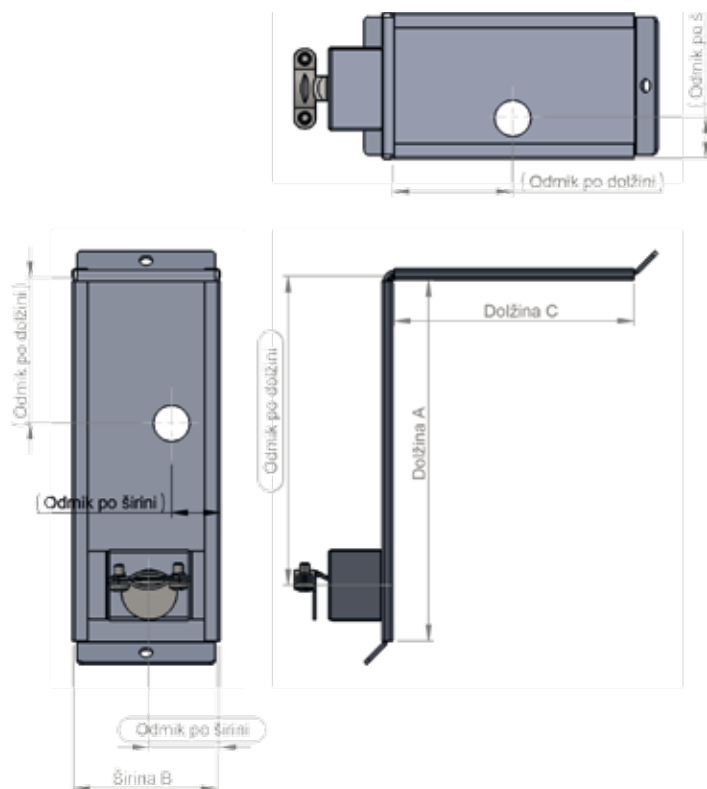
CT-506



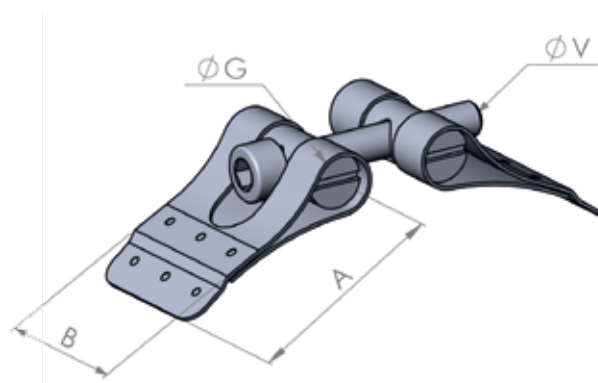
CT-508



CT-550



CT-505



Slika: SESTAV ŠPANER / Drawing: CLAMP ASSEMBLY

Španer/Clamp	G	V	A	B
S	8	M5	31	20
M	8	M5	31	25
L	10	M6	45	30

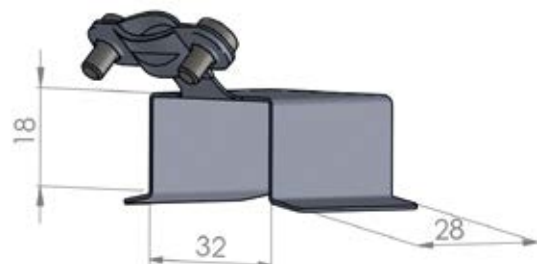
PRIKLJUČNE ŠKATLE / CONNECTION BOXES

C-10 AXIAL Priključna skatla / Connection box



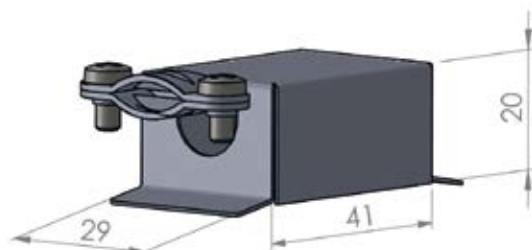
- Sheet metal housing
- Cable gland
- 230V/400V/10A
- Cable direction EX1, EX3
- GM.12 GM.50 GM.55 GM.60
- Pločevinasto ohišje
- Uvodnica
- 230V/400V/10A
- Smer kabla EX1, EX3
- GM.12 GM.50 GM.55 GM.60

C-20 AXIAL Priključna skatla / Connection box



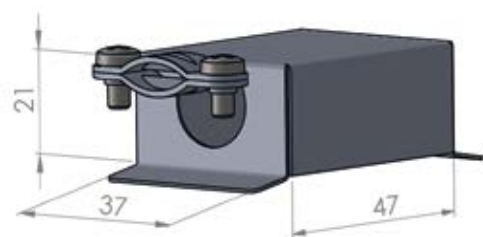
- Sheet metal housing
- Cable gland
- 230V/400V/16A
- Cable direction EX1, EX3
- GM.50 GM.55 GM.60
- Pločevinasto ohišje
- Uvodnica
- 230V/400V/16A
- Smer kabla EX1, EX3
- GM.50 GM.55 GM.60

CT-10 TANGENTIAL Priključna skatla / Connection box



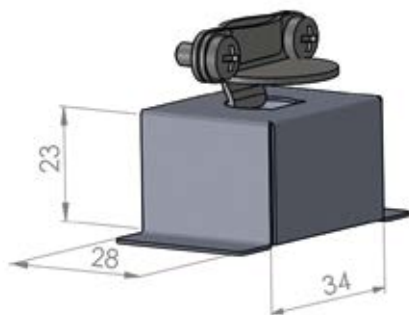
- Sheet metal housing
- Cable gland
- 230V/400V/8A
- Cable direction EX2, EX4
- GM.50 GM.55 GM.60
- Pločevinasto ohišje
- Uvodnica
- 230V/400V/8A
- Smer kabla EX2, EX4
- GM.50 GM.55 GM.60

CT-15 TANGENTIAL Priključna skatla / Connection box



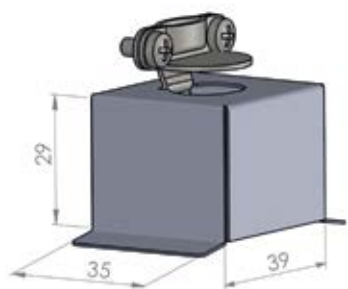
- Sheet metal housing
- Cable gland
- 230V/400V/12A
- Cable direction EX2, EX4
- GM.50 GM.55 GM.60
- Pločevinasto ohišje
- Uvodnica
- 230V/12A
- Smer kabla EX2, EX4
- GM.50 GM.55 GM.60

CV-10 RADIAL Priključna skatla / Connection box



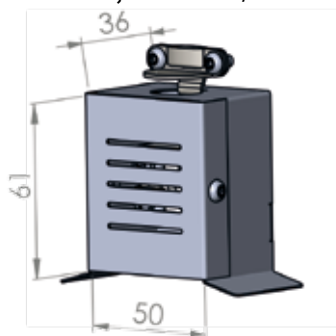
- Sheet metal housing
- Cable gland
- 230V/400V/12A
- Cable direction EX5
- GM.50 GM.55 GM.60
- Pločevinasto ohišje
- Uvodnica
- 230V/400V/12A
- Smer kabla EX5
- Sheet metal housing
- GM.50 GM.55 GM.60

CV-15 RADIAL Priključna skatla / Conection box



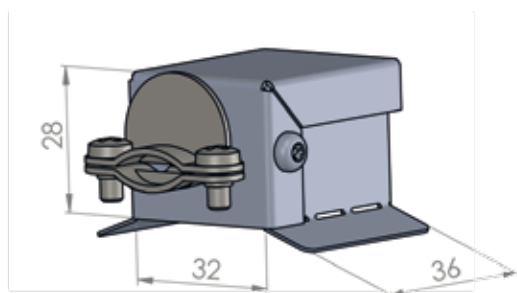
- Sheet metal housing
- Cable gland
- 230V/400V/15A
- Cable direction EX5
- GM.50 GM.55 GM.60
- Plocevinasto ohisje
- Uvodnica
- 230V/12A
- Smer kabla 15A, EX5
- GM.50 GM.55 GM.60

CV-15 RADIAL Priključna skatla / Conection box



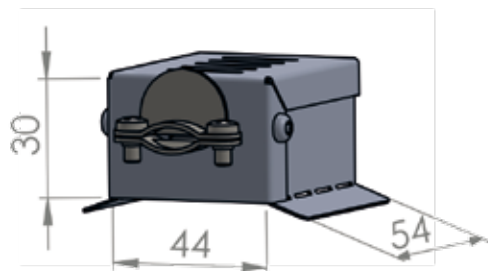
- Sheet metal housing
- Cable gland
- 230V/400V/12A
- Cable direction EX5
- GM.50 GM.60
- Plocevinasto ohisje
- Uvodnica
- 230V/400V/12A
- Smer kabla EX5
- GM.50 GM.60

CA-10 AXIAL Priključna skatla / Conection box



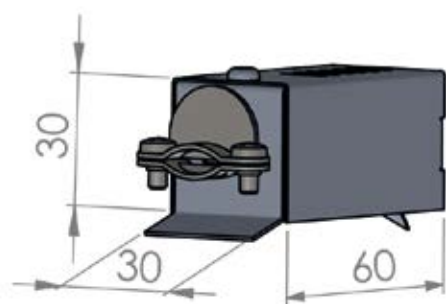
- Sheet metal housing
- Cable gland
- 230V/400V/12A
- Cable direction EX5
- GM.50 GM.55 GM.60
- Plocevinasto ohisje
- Uvodnica
- 230V/400V/12A
- Smer kabla EX5
- GM.50 GM.55 GM.60

CA-20 AXIAL Priključna skatla / Conection box



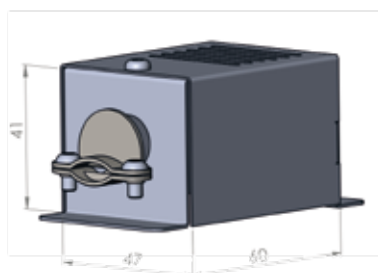
- Sheet metal housing
- Cable gland
- 230V/400V/15A
- Cable direction EX5
- GM.50 GM.55 GM.60
- Plocevinasto ohisje
- Uvodnica
- 230V/400V/15A
- Smer kabla EX5
- GM.50 GM.55 GM.60

CB-10 TANGENTIAL Priključna skatla / Connection box



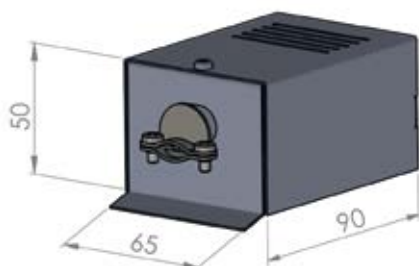
- Sheet metal housing
- Cable gland
- Priključna sponka RIKO 2P10A
- 230V/400V/8A
- Cable direction EX2, EX4
- GM.50 GM.55 GM.60
- Pločevinasto ohišje
- Uvodnica
- Terminal block RIKO 2P10A
- 230V/400V/8A
- Smer kabla EX2, EX4
- GM.50 GM.55 GM.60

CB-15 TANGENTIAL Priključna skatla / Connection box



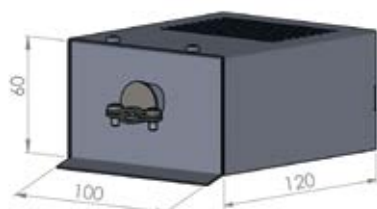
- Sheet metal housing
- Cable gland
- Priključna sponka ALFA 2P15A
- 230V/400V/15A
- Cable direction EX2, EX4
- GM.50 GM.55 GM.60
- Pločevinasto ohišje
- Uvodnica
- Terminal block ALFA 2P15A
- 230V/400V/15A
- Smer kabla EX2, EX4
- GM.50 GM.55 GM.6

CB-20 TANGENTIAL Priključna skatla / Connection box



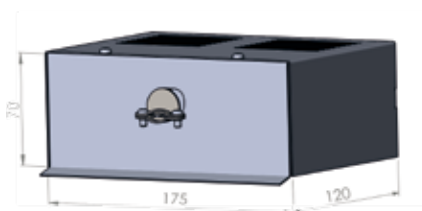
- Sheet metal housing
- Cable gland
- Priključna sponka
- 230V/400V/18A
- Cable direction EX2, EX4
- GM.50 GM.55 GM.60
- Pločevinasto ohišje
- Uvodnica
- Terminal block
- 230V/400V/18A
- Smer kabla EX2, EX4
- GM.50 GM.55 GM.60

CB-30 TANGENTIAL Priključna skatla / Connection box



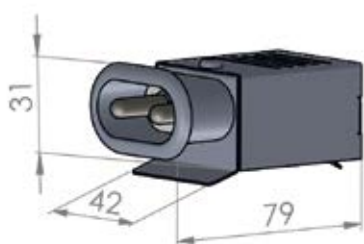
- Sheet metal housing
- Cable gland
- Priključna sponka TRIFIX 3P16
- 230V/400V/3x20A
- Cable direction EX2, EX4
- GM.50 GM.60
- Pločevinasto ohišje
- Uvodnica
- Terminal block TRIFIX 3P16
- 230V/400V/3x20A
- Smer kabla EX2, EX4
- GM.50 GM.60

CB-40 TANGENTIAL Priključna skatla / Connection box



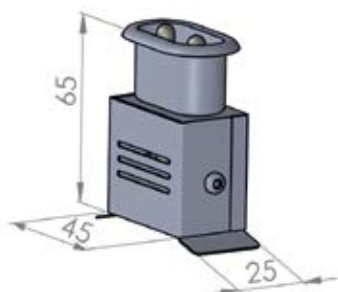
- Sheet metal housing
- Cable gland
- Priključna sponka TOKA
- 230V/400V/3x40A
- Cable direction EX2, EX4
- GM.50 GM.60
- Pločevinasto ohišje
- Uvodnica
- Terminal block TOKA
- 230V/400V/3x40A
- Smer kabla EX2, EX4
- GM.50 GM.60

SA-EURO RADIAL Priključna skatla / Connection box



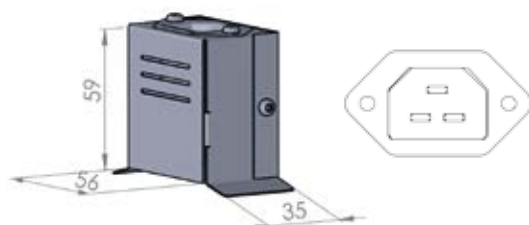
- Sheet metal housing
- 230V/400V/15A
- Cable direction EX5
- Pločevinasto ohišje
- 230V/400V/15A
- Smer kabla EX5

SA-5 RADIAL Priključna skatla / Connection box



- Sheet metal housing
- 230V/400V/15A
- Cable direction EX5
- Pločevinasto ohišje
- 230V/400V/15A
- Smer kabla EX5

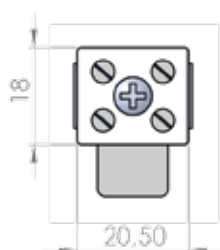
SA-EURO RADIAL priključna škatla / Connection box



- Sheet metal housing
- Built in socket T155
- 230V/400V/16A
- Cable direction EX2, EX4
- Pločevinasto ohišje
- Vgrajena vtičnica T155
- 230V/400V/16A
- Smer kabla EX2, EX4

PRIKLJUČNE KERAMIKE / TERMINAL BLOCK

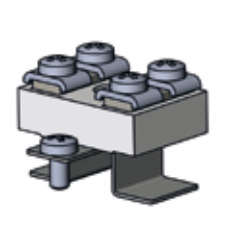
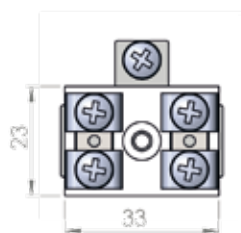
RIKO 2P8A



230V/400/8A

1ph, 2ph

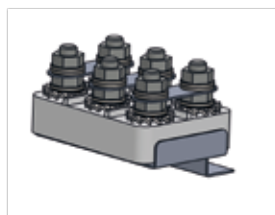
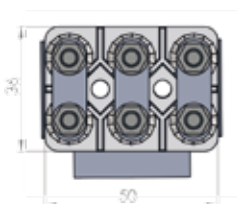
ALFA 2P15A



230V/400V/15A

1ph, 2ph

TRIFIX 3P20A

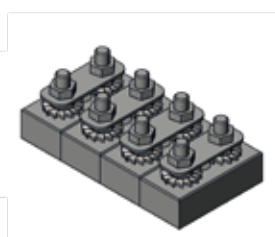
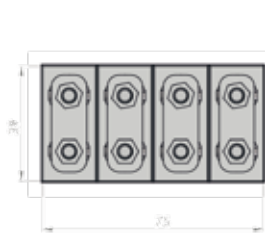


230 V/400V/20A

3 ph

trikot/delta

TOKA 4P30A



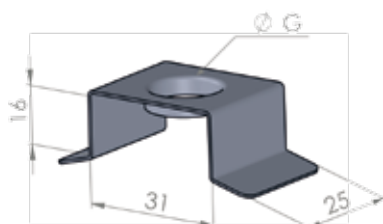
230V/400V/30A

3ph

trikot/delta

zvezda/star

NOSILEC ZA SONE / THERMOCOUPLE CONNECTOR NS



Tip / type

Navoj / Thread G

NS-10 - M10

NS-12 - M12

NS-3/8 - R3/8

NS-1/4 - R1/4

3. Splošni podatki

Grelce lahko uporabljamo samo na strojih ali napravah s temperaturno regulacijo.

Preprečiti je potrebno vdor vode, olja ali drugih medijev. V primeru, da grelec zalije plastika, ga je potrebno nemudoma očistiti, saj na ta način podaljšamo njegovo življenjsko dobo.

Priporočamo, da se za grelce s skupno močjo več kot 5000W uporabi tip grelca GM.60 s keramičnimi elementi. Za premere večje od 200 mm priporočamo uporabo jeklenih vzmeti. Tako boste dosegli enakomerno zategnjen grelec okoli cilindra pri vseh temperaturah.

Pri premerih večjih od 400 mm, dobavljamo grelce sestavljene iz dveh segmentov.

Montaža:

Življenjska doba grelcev je odvisna od tega, ali so grelci pravilno montirani na cilinder ali orodje.

Objemni grelci tipa GM.50 in GM.60 lahko pri montaži razširite do velikosti notranjega premera, tako da se ga lahko potisne preko cilindra.

Pomembno je, da je grelec popolnoma zategnjen oz. oprijet okoli cilindra ali orodja.

Če nima zadostnega stika s cilindrom, ne more odvajati dovolj toplote v objekt katerega segreva, kar privede do pregretja grelca in posledično uničenja grelnega elementa.

Opomba: Vijake grelca med prvim zagonom postopno zategujte, dokler grelec ne doseže delovne temperature in šele takrat ga dokončno zategnite.

Demontaža:

Pri demontaži grelnih elementov, kateri so namenjeni za ponovno uporabo, se izogibajte večjih deformacij grelca. Vse zat egovalne vijaki, je potrebno namazati s posebno visokotemperaturno mastjo NSB-4, da bi preprečili korozijo, tako da lahko demontaža poteka brez težav.

Kontrola kakovosti po standardu DIN EN 60204-(

Vsi grelci so testirani na različnih stopnjah preden zapustijo proizvodnjo.

Standardne meritve

- Upornost grelca $\pm 5\%$
- Prebojna trdnost 1500V
- Izolacijska upornost $M_{rzel} \geq 1 \text{ MOhm}$ pri 500 V DC
- Ozemljitvena žica

3. Basic information

Heating elements should only be used on machines or devices with temperature control equipment. Penetration of oil, water or other media must be avoided.

In case that plastic is injected over the heater, it has to be cleaned immediately, so we can prolong heaters working life.

We recommend that the heater elements with a total power of more than 5000W should be produced with ceramic elements, type GM.60.

For diameters higher than 200 mm , we recommend the use of steel springs in order to guarantee constantly a perfect fitting over cylinder.

With diameters larger than 400 mm , we supply heaters that consist of two or more segments.

Fitting:

Lifetime expectancies of the heaters are dependent whether a heater is correctly mounted on cylinder or tool.

Band heaters type GM.50 and GM.60 can be during assembly spread to the size of the inner diameter, so that it can be pushed over the cylinder.

In order to ensure long and reliable working life it is necessary that the heaters are perfectly fit with the cylinder, by tightening the fastening screws.

Important: The retightening of the nuts and bolts must be done frequently starting from the initial heat up until it reaches to the set operating temperature.

Disassembly:

When disassembling heating elements which are suitable for reuse, avoid major deformation of the heater.

All the tightening screws must be lubricated by a special high temperature grease NSB-4 in order to prevent corrosion, so that the disassembly is carried out easily.

Quality control according to DIN EN 60204- (

All heaters are tested at various stages before leaving the production.

Standard measurements

- Ohmic + - 5%
- Dielectric strength 1500V
- Insulation Resistance ≥ 1 MOhm at 500 V DC
- Ground wire



Šobni grelci
Nozzle heaters
GM.10 GM.11 GM.12



Šobni grelci /
Nozzle heaters
GM.10 GM.11 GM.12



GM.10

GM.12

GM.11

GM.10
GM.11
GM.12

Medenina, Mica izolacija / Brass, Mica insulated

Inox, Mica izolacija / Stainless steel, Mica insulated

Inox, Mica izolacija, večje dimenzije / Stainless steel, Mica insulated, larger dimension

Uporaba

Šobni grelci se uporabljajo za gretje šob pri strojih za predelavo plastičnih mas. Grelci so hermetično zaprti, kar preprečuje vdor plastične mase v grelec in mu podaljša življenjsko dobo. Za visoke tališne temperature (PC, steklena vlakna) in korozivne materiale (PVC) uporabljamo grelce iz nerjavečega jekla GM.11 Opcijsko so lahko vsi grelci opremljeni z vgrajenim temperaturnim tipalom tip J. Šobni grelci so tudi primerni za ogrevanje vseh cilindričnih površin. Uporabljamo jih, kot rezervni del na skoraj vseh strojih za brizganje termoplastov.

Description

The Nozzle Band Heaters (GM.10) and GM.11) are manufactured for use on injection moulding machines in the plastic processing industry. They are plastic resistant which allows high life expectancy and guarantee a required temperature on the nozzle. For high melt temperature (PC, glassfiber filled) and corozive materials (PVC) we recommend to use heaters made of stainless steel GM.11 All heaters can be optional equipped with integrated thermocouple type J. Nozzle Band Heaters are also suitable for general cylindrical heating. They can be used on most current machines.

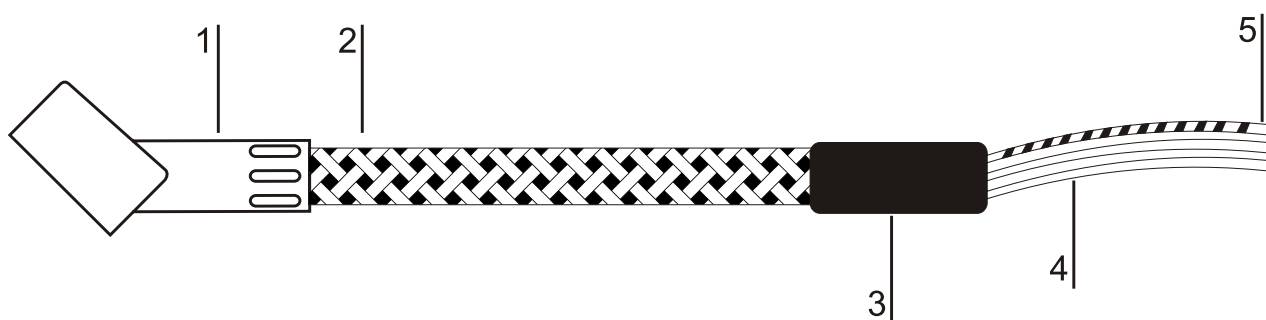
Tehnične lastnosti:

- Specifična moč: do 4,5 W/cmm2 (medenina) GM.10
do 6,5 W/cmm2 (inox) GM.11
- Delovna temperatura do 300 °C (medenina) do 400 °C
(inox)
- Standardna napetost: 230V
- Material ohišja: Medenina ali Inox
- Izolacijski material: MICANIT
- Grelni prevodnik: Nickle-Chrome 80/20
- Temperaturno obstojen armiran kabel, pri katerem je
nikel vodnik izoliran s steklenimi vlakni do(400°C)
- Integrirano tipalo tip Jali K (opcija)

Technical Specifications:

- Max. Watt density: up to 4,5 W/cmm2 (brass) GM.10
up to 6,5 W/cmm2 (inox) GM.11
- Working temperature up to 300 °C (brass) to 400 °C
(inox)
- Voltage: 230V
- Sheath mat.: Brass or stainless steel
- Insulation material: MICA
- Heating conductor: Nickle-Chrome 80/20
- Temperature resistant pure nickel wires with glass-silk
insulation and a steel mesh cover (400°C)
- Integrated thermocouple type J or K (option)

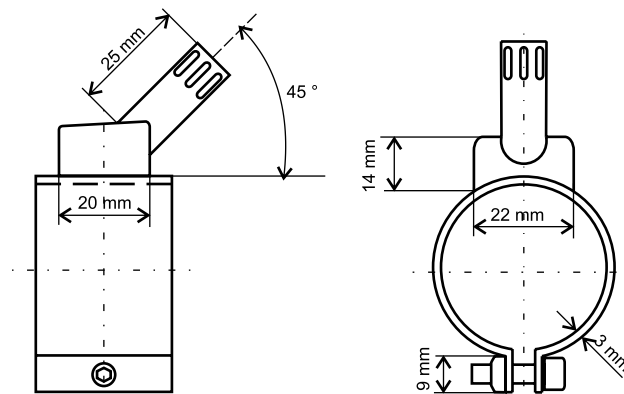
KABELSKI PRIKLJUČEK ZA ŠOBNE GRELCE / CABLE EXIT FOR NOZZLE BAND HEATERS:



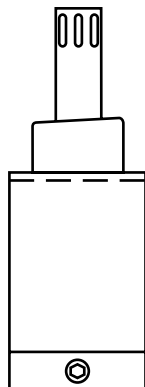
1. Trdi priključek / Rigid connection
2. Kovinsko oklopljen kabel / Metal braided sleeve
3. Temp obstojna zaščita / Heat resistant rubber protection
4. Nikel vodnik z barvno kodo / Nickel wire with colour code / 60 mm
5. Očiščeni vodnik / Crimped cable ends – optional

Standardne dolžine kablov / Prefabricated standard cable lengths: 300 mm, 500 mm, 1000 mm, 1500 mm, 2000 mm

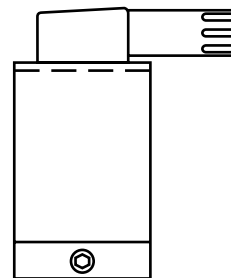
PRIKLJUČKI ZA ŠOBNE GRELCE / CONNECTION OPTIONS FOR NOZZLE BAND HEATERS



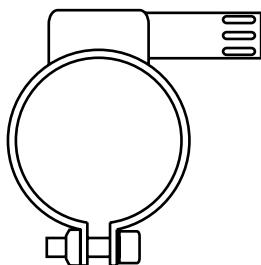
Tip A 45° / Type A 45° standardna izvedba / standard delivery



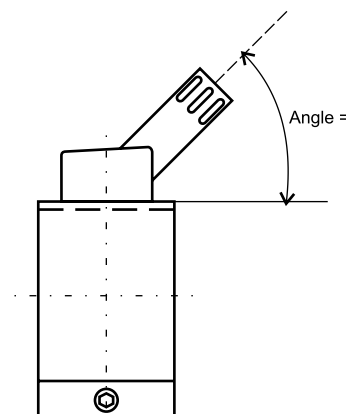
Tip C Radial 90° / Type C Radial 90°



Tip B Axial 0° / Type B Axial 0°



Tip D Tangencialno 0° / Type D Tangencial 0°



Tip E specialna izvedba / Type, custom design
Določi kot in smer / Specife: angle and direction



SERIJA GM.10 MEDENINA / BRASS

NAPETOST/VOLTAGE: 230 V

POVRŠIN. OBTEŽBA / WATT DENSITY: 4,5 W/CMM2

Koda/Code	Premjer/Diameter	Širina/Width	Wattage
3020100	30	20	100
3025130	30	25	130
3030150	30	30	150
3035150	30	35	150
3040200	30	40	200
3050230	30	50	230
3520120	35	20	120
3525150	35	25	150
3530150	35	30	150
3535180	35	35	180
3540200	35	40	200
3550230	35	50	230
4020150	40	20	150
4025150	40	25	150
4030150	40	30	150
4035200	40	35	200
4040200	40	40	200
4050250	40	50	250
4060300	40	60	300
4520150	45	20	150
4525150	45	25	150
4530180	45	30	180
4535220	45	35	220
4540250	45	40	250
4550300	45	50	300

Koda/Code	Premier/Diameter	Širina/Width	Wattage
4820150	48	20	150
4825170	48	25	170
4830200	48	30	200
4835200	48	35	200
4840250	48	40	250
4850300	48	50	300
5020150	50	20	150
5025170	50	25	170
5030200	50	30	200
5035240	50	35	240
5040280	50	40	280
5050350	50	50	350
5520150	55	20	150
5525200	55	25	200
5530220	55	30	220
5535270	55	35	270
5540300	55	40	300
5550380	55	50	380
6020170	60	20	170
6025200	60	25	200
6030250	60	30	250
6035250	60	35	250
6040300	60	40	300
6050400	60	50	400
6520184	65	20	184
6525230	65	25	230
6530270	65	30	270
6535320	65	35	320
6540350	65	40	350
6550450	65	50	450

SERIJA GM.11 GM.12

NAPETOST/VOLTAGE: 230 V

POVR_IN. OBTE_BA / WATT DENSITY: 6,36 W/CMM2

Koda/Code	Premier/Diameter	Širina/Width	Wattage
3020120	30	20	120
3025150	30	25	150
3030180	30	30	180
3035210	30	35	210
3040240	30	40	240
3050300	30	50	300
3520140	35	20	140
3525170	35	25	170
3530210	35	30	210
3535245	35	35	245
3540280	35	40	280
3550340	35	50	340

Koda/Code	Premier/Diameter	Širina/Width	Wattage
4020160	40	20	160
4025200	40	25	200
4030240	40	30	240
4035280	40	35	280
4040320	40	40	320
4050350	40	50	350
4060470	40	60	470
4520180	45	20	180
4525225	45	25	225
4530270	45	30	270
4535315	45	35	315
4540350	45	40	350
4550440	45	50	440
4820190	48	20	190
4825240	48	25	240
4830280	48	30	280
4835330	48	35	330
4840380	48	40	380
4850470	48	50	470
5020200	50	20	200
5025250	50	25	250
5030300	50	30	300
5035340	50	35	340
5040390	50	40	390
5050490	50	50	490
5520220	55	20	220
5525270	55	25	270
5530330	55	30	330
5535380	55	35	380
5540430	55	40	430
5550540	55	50	540
6020240	60	20	240
6025300	60	25	300
6030350	60	30	350
6035410	60	35	410
6040470	60	40	470
6050590	60	50	590
6520260	65	20	260
6525325	65	25	325
6530380	65	30	380
6535450	65	35	450
6540500	65	40	500
6550640	65	50	640



**Grelci s pospešenim
hlajenjem za ekstruder**
**Heating/cooling bands
for extruders**

GM.40



Grelci s pospešenim
hlajenjem za
ekstruder
Heating/cooling
bands for extruders
GM.40



Uporaba

- Segrevanje/Hlajenje cilindrov na ekstruderjih za predelavo plastike

Prednosti GM.40

- Hiter čas segrevanje cilindra
- Hitro ohlajevanje cilindra zaradi prisilnega hlajenja
- Zadrževanje na delovni temperaturi zaradi segrevanje/hlajenja
- Enakomerno gretje po površini
- Enostavna montaža

Dimenzije

- Premeri od 60 mm
- Širine od 90 mm
- Debelina od 35 mm

Use

- Heating/cooling of extruder cylinders

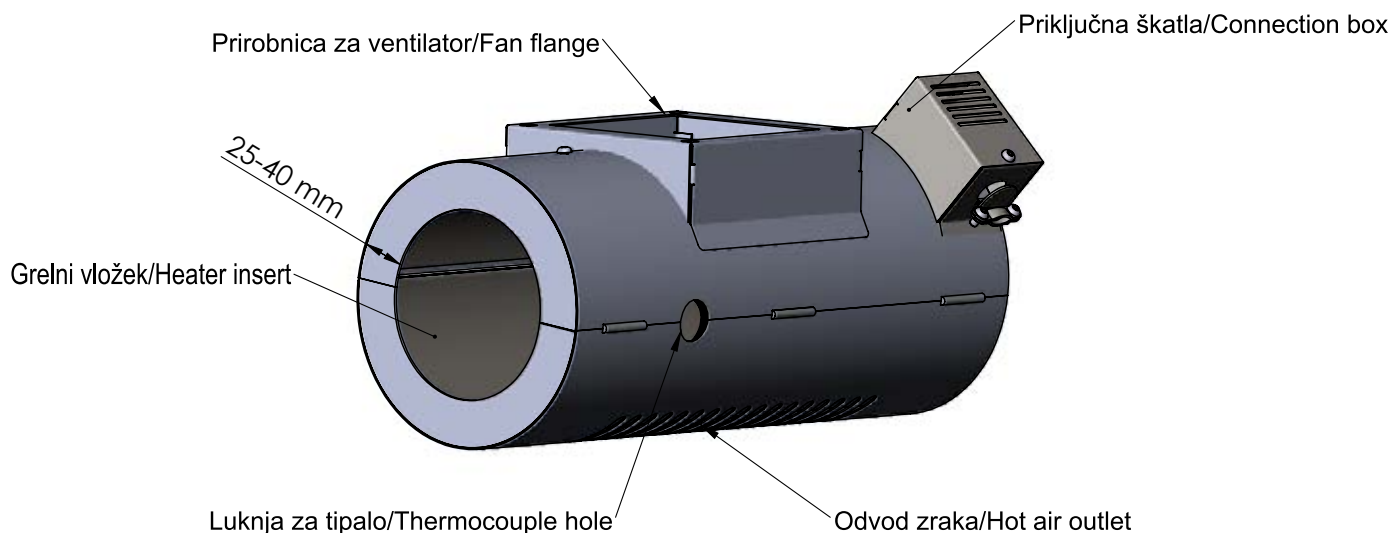
Advantages of the GM.40 Heat/Cool

- Fast warm up for extruder cylinders
- Quick cooling down due to forced cool air
- Maintaining of target temperature with heat/cool combination
- Heating uniformity
- Easy installation

Dimensions

- Diameters from 60 mm ,
- Widths from 90 mm
- Thickness: from 35 mm

Konstrukcija / Construction



Tehnične lastnosti

- Mat. ohišja: 0,8 mm aluminizirana pločevina
- Grelni vložek: GM.60, GM.50
- Specifična moč: do 8 W/cmm2 glede na grelni vložek
- Delovna temperatura: do 300°C
- Luknje in nosilci temperaturnih tipal
- Prirobnica za ventilator, glede zahteve kupca
- Odvod zraka je postavljen na nasprotno stran ventilatorja
- Usmerniki zraka poskrbijo za usmerjeno hlajenje

Technical Specifications

- Mat. housing: 0,8 mm aluminised sheet steel
- Heater insert: GM.60, GM.50
- Max. Watt density 8 W/cmm2 related to the heater bands
- Working temperature.: max 300 °C
- Holes and holder for thermocouple
- Connection flange for fan according to customer specification
- The air outlet opening is installed on opposite side of fan
- Air deflectors may be fitted for directed cooling



**Objemni grelci
z MICA izolacijo
MICA insulated
band heaters**

GM.50



Objemni grelci z
MICA izolacijo /
MICA insulated
band heaters

GM.50



Uporaba

- Uporabljajo se za gretje cilindrov pri strojih za predelavo plastičnih mas
- MICA objemni grelci so idealni za gretje okroglin in cilindrov

Prednosti MICA objemnih grelcev

- Odlična toplotna prevodnost
- MICA grelec je najbolj ekonomična izbira gretja
- Dolga življenska doba pri pravilni uporabi (montaža)
- Enakomerno gretje po površini
- Enostavna uporaba
- Izjemna dielektrična trdnost

Dimenzije

- Premeri od 60 mm, za grelce s premeri večjimi od 400 mm priporočamo uporabo 2 segmentov
- Širine od min. 20 mm do max. 800 mm

Use

- For heating molds, dies, nozzles and especially to heat the cylinders(barrels) for injection molding machines or extruders
- Mica Band heaters are ideal solution for heating cylindrical surfaces

Advantages

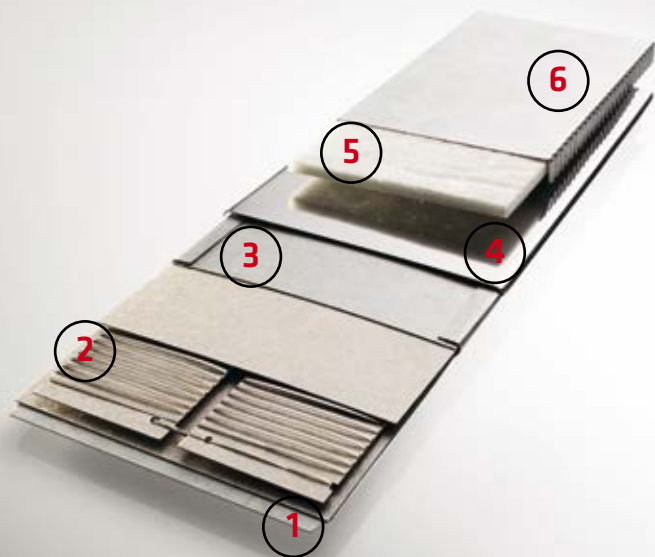
- Excellent thermal conductivity as heat transfer
- The Mica heater is most economic
- Very long life of the heater if its mounted correctly
- Heating uniformity
- Easy installation
- Excellent dielectric strength

Dimensions

- Diameters from 60 mm , for heaters with diameter larger than 400 mm we recommend to use 2 segments
- Widths from min. 20 mm to max. 800 mm

Konstrukcija / Construction

GM.50



1. počevina / Plate
2. Grelni prevodnik z izolacijo / Heat conductor with insulation
3. pločevina / Plate
4. zategovalno ohišje / Campa band
5. Temp. zaščitno ohišje GM.52* / Heat projection jacket GM.52*
5. Izolacija / Insulation
6. Temperaturno zaščitno ohišje / Heat protection Jacket GM.52 prosim označite pri naročilu serije GM.52 / please specife when ordering serie GM.52

Tehnične lastnosti:

- Specifična moč: do 4 W/cmm2
- Delovna temperatura do 350 °C
- Standardna napetost: 230V, 400V
- Material ohišja: Nerjaveče jeklo AISI430
- Izolacijski material: MICANIT
- Grelni prevodnik: Nickle-Chrome 80/20
- Temperaturno obstojen armiran kabel, pri katerem je nikel vodnik izoliran s steklenimi vlakni. (400°C)

Technical Specifications:

- Max. Watt density 4 W/cmm2
- Working temperature up to 350 °C
- Voltages 230V, 400V or other
- Sheath Stainless Steel AISI430
- Insulation material MICA
- Heating conductor Nickle-Chrome 80/20
- Temperature resistant pure nickel wires with glass-silk insulation and a steel mesh cover (400°C)



**Objemni grelci z ceram
izolacijo**

**Ceramic insulated
band heaters**

GM.60



Objemni grelci z
ceram izolacijo
Ceramic insulated
band heaters
GM.60



Uporaba

- Uporabljajo se za gretje cilindrov pri strojih za predelavo plastičnih mas
- CERAM pasasti grelci so idealni za gretje okroglin in cilindrov

Prednosti CERAM objemnih grelcev

- Odlična toplotna prevodnost
- Visoka predelovalna temperatura
- Dolga življenska doba pri pravilni uporabi (montaža)
- Enakomerno gretje po površini
- Enostavna uporaba
- Izjemna dielektrična trdnost

Dimenzije

- Premeri od 60 mm , za grelce s premeri večjimi od 400 mm priporočamo uporabo 2 segmentov
- Širine od min. 23 mm do max. 800 mm

Use

- For heating molds, dies, nozzles and especially to heat the cylinders(barrels) for injection molding machines or extruders
- CERAM Band heaters are ideal solution for heating cylindrical surfaces

Advantages of the CERAM Band heaters

- Excellent thermal conductivity as heat transfer
- High working temperature
- Very long life of the heater if its mounted correctly
- Heating uniformity
- Easy installation
- Excellent dielectric strength

Dimensions

- Diameters from 60 mm , for heaters with diameter larger than 400 mm we recommend to use 2 segments
- Widths from min. 23 mm to max. 800 mm

Konstrukcija / Construction



1. Izolacija iz keramičnih vlaken / Ceramic fiber insulation
2. Grelno navitje / Resistive winding
3. Ohišje iz aluminijaste pločevine / External aluminized steel
4. Keramični elementi / Ceramic elements

Tehnične lastnosti

- Specifična moč: do 8 W/cmm2
- Delovna temperatura do 550 °C
- Standardna napetost: 230V, 400V
- Material ohišja: Aluminizirana pločevina
- Izolacijski material: Keramična vlakna
- Grelni prevodnik: Nickle-Chrome 80/20
- Temperaturno obstojen armiran kabel, pri katerem je nikel vodnik izoliran s steklenimi vlakni. (400°C)

Technical Specifications

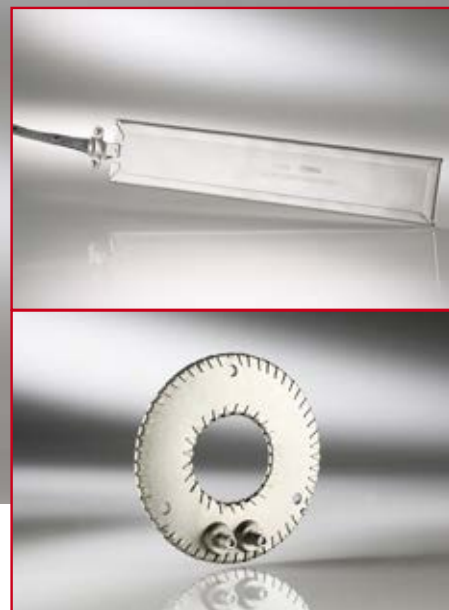
- Max. Watt density 8 W/cmm2
- Working temperature up to 550 °C
- Voltages 230V, 400V or other
- Sheath Aluminized steel
- Insulation material Ceramic fibers
- Heating conductor Nickle-Chrome 80/20
- Temperature resistant pure nickel wires with glass-silk insulation and a steel mesh cover (400°C)



**Ploščati in okvirni
grelci
Mica flat heaters
GM.55**



Ploščati in okvirni
grelci
Mica flat heaters
GM.55



Uporaba

- Uporabljajo se za gretje modelov in orodij v industriji za predelavo plastičnih mas
- Orodja za brizganje plastike
- Orodja za ekstrudorje
- Ploščate površine za stiskalnice
- Vakumsko pakirne stroje
- Stroje v prehrabeni industriji

Prednosti MICA ploščatih grelcev

- Odlična toplotna prevodnost
- Enakomerno gretje po površini
- Enostavna uporaba
- Izjemna dielektrična trdnost

Dimenzije

- min. širina 20 mm
- Dolžina po zahtevi

Use

For heating molds in plastic moulding industry

- Molds for plastic
- Molds in plastic extrusion
- Flat surfaces for presses
- Packaging machines
- Thermofotmig machines
- Food industry machines

Advantages of the Mica flat heaters

- The Mica heater is most economic
- Heating uniformity
- Easy instalation

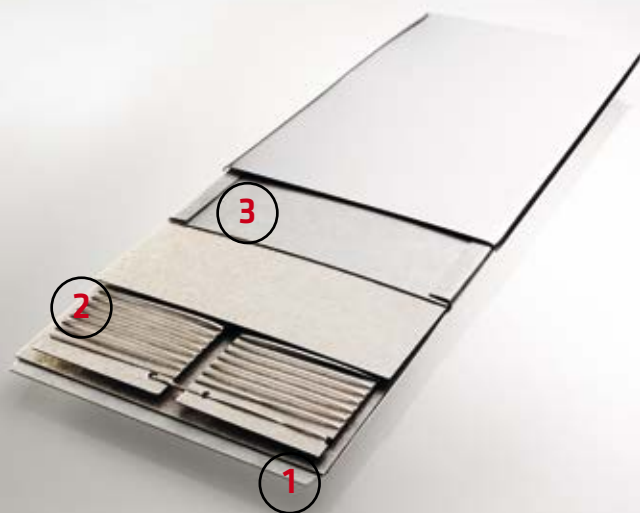
- Excellent dielectric strength

Dimensions

- Width min. 20 mm
- Length as per demand

GM.55, 550 konstrukcija / construction

1. počevina / Plate
2. Grelni prevodnik z izolacijo / Heat conductor with insulation
3. pločevina / Plate



GM.55 standard



Grelec je potrebno montirati z pritrdilno ploščo debeline 5-10 mm/
Heater has to be fitted with pressure plate thickness 5-10 mm

GM.550 with built in steel plate



Tehnične lastnosti

- Specifična moč: do 4 W/cmm²
- Delovna temperatura do 350 °C za visoke temp. Uporablamo izolacijo CERAM
- Standardna napetost: 230V, 400V
- Material ohišja: Nerjaveče jeklo AISI430
- Izolacijski material: MICANIT
- Grelni prevodnik: Nickle-Chrome 80/20
- Temperaturno obstojen armiran kabel, pri katerem je nikel vodnik izoliran s steklenimi vlakni. (400°C)

Technical Specifications

- Max. Watt density 4 W/cmm²
- Working temperature up to 350 °C for high temp we use CERAMIC insulation
- Voltages 230V, 400V or other
- Sheath Stainless Steel AISI430
- Insulation material MICA
- Heating conductor Nickle-Chrome 80/20
- Temperature resistant pure nickel wires with glass-silk insulation and a steel mesh cover (400°C)



Izolacijska ohišja Insulation coverings

GM.56



Izolacijska ohišja
Insulation
coverings
GM.56



Znižuje CO2
Reduce CO2



Uporaba

HEATSAVE Izolacijska ohišja se lahko izdelajo za vsak objemni grelec, neodvisno od tipa stroja. Izolacijsko ohišje ima odprtine za električni priključek in tipala. Zaradi večplastne sestave izolacijskega blaga, odpornega na visoko temperaturo lahko površinsko temperaturo in izgubo energije objemnega grelca znatno zmanjšamo.

Konstrukcija

Mehansko ojačan izolator iz steklene volne je vшит med dve na abrazijo odporni plasti iz steklenih vlaken. Oba materiala sta odporna na trajno visoko temperaturo, ki je lahko tudi višja od 500°C. Zunanja plast izolacijskega ohišja sestoji iz zelo odpornega materiala, ki ščiti tako pred umazanijo kot tudi pred plastično maso

Prednosti

- Manjša poraba energije od 20 do 40 %
- Daljša življenjska doba objemnega grelca zaradi manj pogostega vklopa in izklopa grelca
- Vecja varnost pri delu zaradi nižje površinske temperature od 60 do 75 %
- Enostavna montaža in demontaža
- HEATSAVE ohišje se amortizira v manj kot 1 letu
- Negorljiv material
- Krajši čas segrevanja do delovne temperature
- Izolacijska ohišja so izdelana po meri
- Izboljšanje delovnih pogojev in mikroklima, saj grelci oddajajo znatno manj toplote (še posebej pomembno v poletnih mesecih)
- Enotna temperatura po vsem cilindru

Construction

Insulating covers can be produced for each bandheater independent of type of machine. Electrical connection and sensors can be individually adjusted. Because of special construction with several layers with high temperature stability, resulting in lower surface temperature the loss of energy being reduced.

- Food industry machines

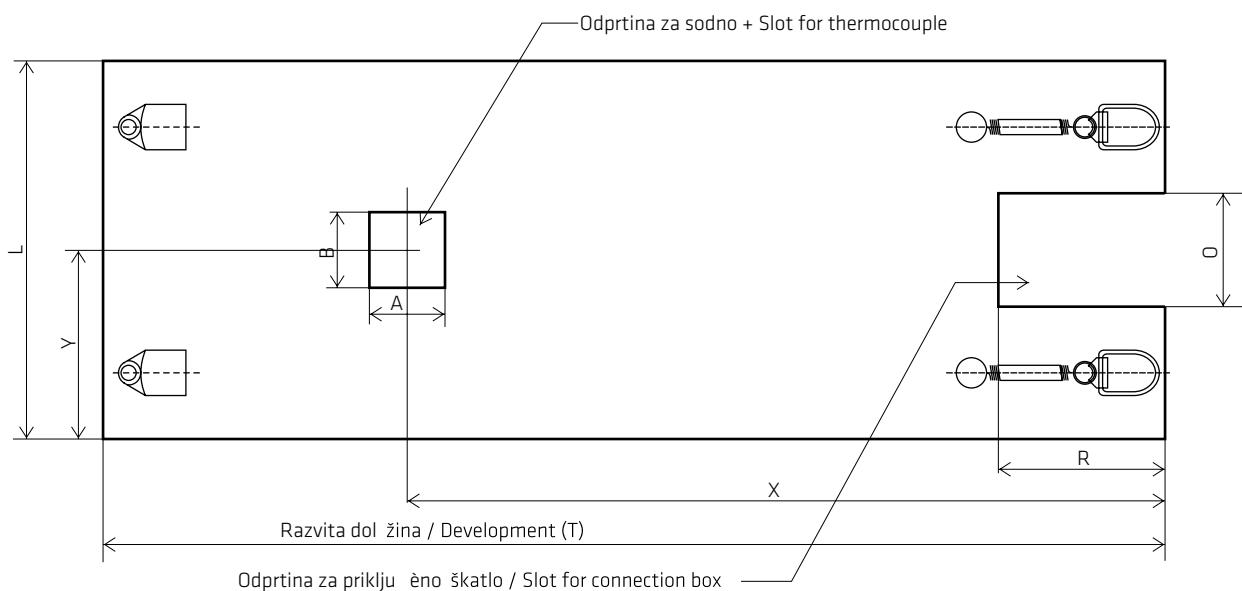
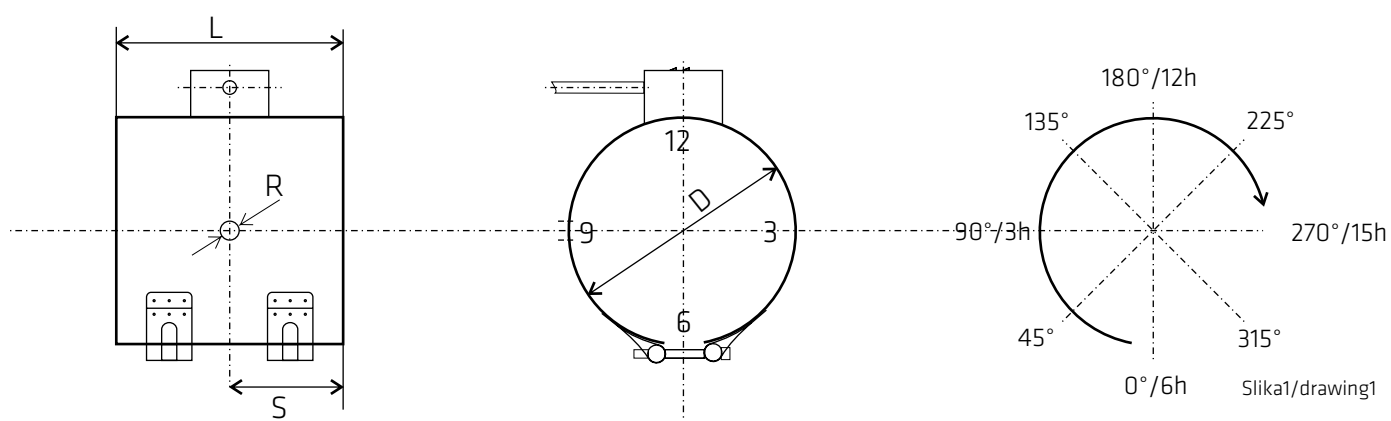
Advantages of the Mica Band heaters

Mechanically reinforced fibre fleece is sewn in an abrasion proofed glass fabric. Both materials have a terminal stability of more

than 500°C. External surfaces of insulation consists of highly durable and abrazion proofed material, witch resist both dirt and plastic material.

Advantages

- It reduces 20-40% energy consumption of the machine heaters
- Extended life of the heaters because of less on and off cycles
- Increased protection by reduction of the surface contact temperature by 60-75%
- It can always be retro-fitted rapid assembly and disassembly
- Amortisation time of HEATSAVE is less then 1 year
- Non-inflammable
- Reduction of the „start-up“ time
- Custom made
- Impovement of room temperature, because heaters radiate much less heat (Very important in summer months)
- Even temperature profile of the machine-cylinder





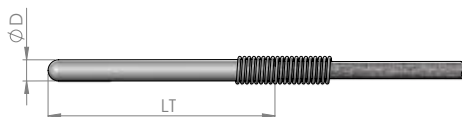
Tipala Thermocouples GM.90



Tipala Thermocouples GM.90

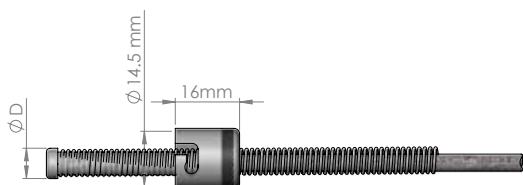


VTIČNA TIPALA / THERMOCOUPLE



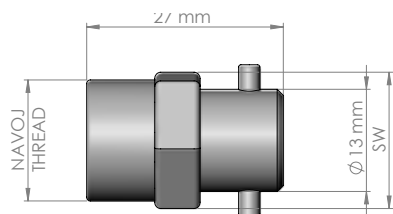
Koda / Code:	GM.945050	GM.9450100	GM.946050	GM.9460100	GM.956050	GM.9560100
Dimenzija / Dimension:	Ø 5x50 mm	Ø 5x100 mm	Ø 6x50 mm	Ø 6x100 mm	Ø 6x50 mm	Ø 6x100 mm
Dolžina kabla / Cable length:	2000 mm	2000 mm	2000 mm	2000 mm	2000 mm	2000 mm
Material:	AISI304	AISI304	AISI304	AISI304	AISI304	AISI304
Tip tipala / Sensor type:	FeCuNi/J	FeCuNi/J	FeCuNi/J	FeCuNi/J	PT-100	PT-100
Max temp.:	400°C	400°C	400°C	400°C	300°C	300°C

BAJONETNA TIPALA / BAYONET THERMOCOUPLE



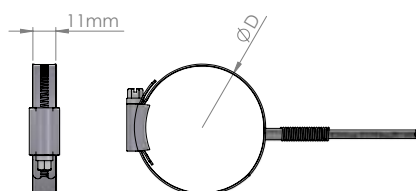
Koda / Code:	GM.94160	GM.94180
Dimenzija / Dimension:	Ø 6 mm	Ø 8 mm
Dolžina kabla / Cable length	2000 mm	2000 mm
Material:	AISI304	AISI304
Tip tipala / Sensor type:	FeCuNi/J	FeCuNi/J
Max temp.:	400°C	400°C

NASTAVEK ZA BAJONET / BAYONET ADAPTOR



Koda	Ključ	Navoj
9414	SW17	R1/4"
9438	SW17	R3/8"
9412	SW17	M12x1
Code	Wrench	Thread

OBJEMNO TIPALO_AXIAL / CLAMP THERMOCOUPLE_AXIAL



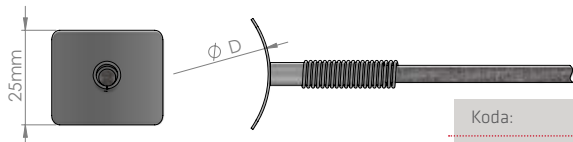
Koda / Code:	GM.9725	GM.9740	GM.9770
Dimenzija / Dimension:	Ø25-Ø40	Ø40-Ø60	Ø70-Ø90
Dolžina kabl / Cable length	2000 mm	2000 mm	2000 mm
Material:	AISI304	AISI304	AISI304
Tip tipala / Sensor type:	FeCuNi/J	FeCuNi/J	FeCuNi/J
Max temp.:	400°C	400°C	400°C

OBJEMNO TIPALO_TANG / CLAMP THERMOCOUPLE_TANG



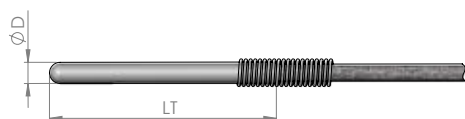
Koda / Code:	GM.9725	GM.9740	GM.9770
Dimenzija / Dimension:	Ø25-Ø40	Ø40-Ø60	Ø70-Ø90
Dolžina kabl / Cable length	2000 mm	2000 mm	2000 mm
Material:	AISI304	AISI304	AISI304
Tip tipala / Sensor type:	FeCuNi/J	FeCuNi/J	FeCuNi/J
Max temp.:	400°C	400°C	400°C

PODTIPALO / UNDER NOZZLE THERMOCOUPLE



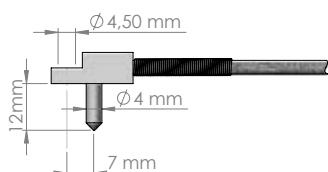
Koda: Code:	GM.9430	GM.9450	GM.9470
Dimenzija / Dimension:	Ø30-Ø50	Ø50-Ø70	Ø70-Ø100
Dolžina kabl / Cable length	2000 mm	2000 mm	2000 mm
Material:	AISI304	AISI304	AISI304
Tip tipala / Sensor type:	FeCuNi/J	FeCuNi/J	FeCuNi/J
Max temp.:	400°C	400°C	400°C

TIPALO ZA TOPLE ŠOBE / NOZZLE THERMOCOUPLE



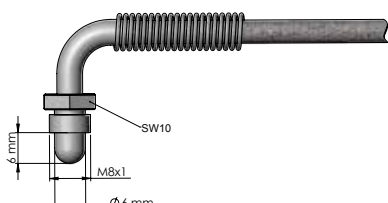
Koda / Code:	GM.941050	GM.9410100	GM.9410150	GM.9410200	GM.941550	GM.9415100	GM.9415150	GM.9415200
Dimenzija / Dimension:	Ø1,5x50mm	Ø1,5x100mm	Ø1,5x150mm	Ø1,5x200mm	Ø1,0x50mm	Ø1,0x100mm	Ø1,0x150mm	Ø1,0x200mm
Dolžina kabl / Cable length	2000 mm	2000 mm	2000 mm	2000 mm	2000 mm	2000 mm	2000 mm	2000 mm
Material:	AISI304	AISI304	AISI304	AISI304	AISI304	AISI304	AISI304	AISI304
Tip tipala / Sensor type:	FeCuNi/J	FeCuNi/J	FeCuNi/J	FeCuNi/J	FeCuNi/J	FeCuNi/J	FeCuNi/J	FeCuNi/J
Max temp.:	650°C	650°C	650°C	650°C	650°C	650°C	650°C	650°C

TIPALO ZA BLOK / MANIFOLD THERMOCOUPLE



Koda / Code:	GM.9404012
Dimenzija / Dimension:	Ø4x12 mm
Dolžina kabl / Cable length	2000 mm
Material:	Brass
Tip tipala / Sensor type:	FeCuNi/J
Max temp.:	400°C

VIJAČNO TIPALO / SCREW-IN THERMOCOUPLE



Koda / Code:	GM.9404012
Dimenzija / Dimension:	M8x1/Ø6mm
Dolžina kabl / Cable length	2000 mm
Material:	AISI304
Tip tipala / Sensor type:	FeCuNi/J
Max temp.:	400°C



El. oprema
Accessories
GM.100





GM.344 ELEKTRIČNI ŠUKO VTIKAČ / ELECTRIC CONNECTION PLUG



Električni euro vtikač / Electric connection plug

Karakteristike:

Keramični izolator
Aluminijska ročka
Delovna temperatura 300°C
Kratkočasno 350°C
Max obremenitev 25 A

Technical features:

Ceramic insulator body
Aluminium handel
Working temperature 300°C
For a short time up to 350°C
Max load 25 A

GM.344.90 ELEKTRIČNI ŠUKO VTIKAČ / ELECTRIC CONNECTION PLUG 90°



Električni euro vtikač / Electric connection plug 90°

Karakteristike:

Keramični izolator
Aluminijska ročka
Delovna temperatura 300°C
Kratkočasno 350°C
Max obremenitev 25 A
90° izvedba

Technical features:

Ceramic insulator body
Aluminium handel
Working temperature 300°C
For a short time up to 350°C
Max load 25 A
90° execution

GM.344SI ELEKTRIČNI ŠUKO VTIKAČ / ELECTRIC CONNECTION PLUG



Električni euro vtikač / Electric connection plug

Karakteristike:

Telo narejeno iz silikona
Delovna temperatura 200°C
Kratkočasno 300°C
Max obremenitev 16 A

Technical features:

Silicone based body
Working temperature 200°C
For a short time up to 300°C
Max load 16 A

GM.1561 ELEKTRIČNI EURO VTIKAČ / ELECTRIC CONNECTION PLUG



Električni euro vtikač / Electric connection plug

Karakteristike:

Izolator iz steatita
Ročka iz duroplasta
Delovna temperatura 155°C
Kratkočasno 200°C
Max obremenitev 16 A

Technical features:

Steatite insulator body
Duroplast handel
Working temperature 155°C
For a short time up to 200°C
Max load 16 A

GM.1562.90 ELEKTRIČNI EURO VTIKAČ / ELECTRIC CONNECTION PLUG 90°



Električni euro vtikač / Electric connection plug 90°

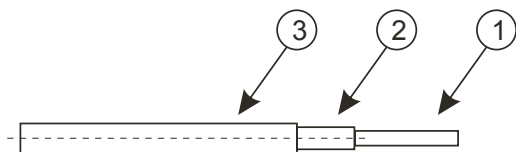
Karakteristike:

Izolator iz steatita
Ročka iz duroplasta
Delovna temperatura 155°C
Kratkočasno 200°C
Max obremenitev 16 A
90° izvedba

Technical features:

Steatite insulator body
Duroplast handel
Working temperature 155°C
For a short time up to 200°C
Max load 25 A
90°C execution

GM.100 TEMPERATURNO OBSTOJNE ŽICE / TEMPERATURE RESISTANT WIRES



1. Nikel prevodnik / Nickel Conductor
2. P.T.F.E. trak / Band
3. P.T.F.E. steklena vlakna / impregnated fiberglass

Karakteristike:

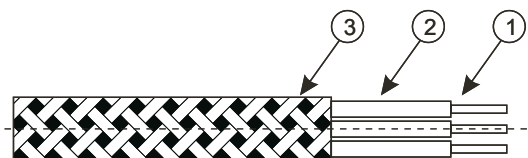
Delovna temperatura 300°C
 Kratkočasno 350°C
 Napetost 300/500V
 Prebojna trdnost 1500V

Technical features:

Working temperature 300°C
 For a short time up to 350°C
 Nominal volage 300/500V
 Dielectric strength 1500V

Ø mm	Økončni	Max obremenitev(A)	Koda
0,50	1,7	2,5	100050
0,75	1,9	4,5	100075
1,00	2,1	5,5	100100
1,50	2,4	7,0	100150
2,50	2,8	10,0	100250
4,00	3,8	13,5	100400
Ø mm	Øfinal	Max load (A)	Code

GM.300 TEMPERATURNO OBSTOJNI KABLI / TEMPERATURE RESISTANT CABLE



1. Nikel prevodnik / Nickel Conductor
2. P.T.F.E. steklena vlakna / impregnated fiberglass
3. Zaščitna jeklena mrežica / Protective metal braiding

Karakteristike:

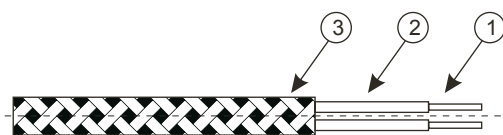
Delovna temperatura 300°C
 Kratkočasno 350°C
 Napetost 300/500V
 Prebojna trdnost 1500V

Technical features:

Working temperature 300°C
 For a short time up to 350°C
 Nominal volage 300/500V
 Dielectric strength 1500V

Ø mm	Økončni	Max obremenitev(A)	Koda
3X0,5	6,8	2,5	300050
3X1,0	7,5	4,5	300100
3X1,5	8	5,5	300150
3X2,5	9	7,0	300250
4X4,0	13	10,0	400400
nominal	Øfinal	Max load (A)	Code

GM.200 KOMPENZACIJSKI KABEL / COMPENSATION CABLE



1. Kompenzacijska žica / Compensation wire J
2. P.T.F.E. steklena vlakna / impregnated fiberglass
3. Zaščitna jeklena mrežica / Protective metal braiding

Karakteristike:

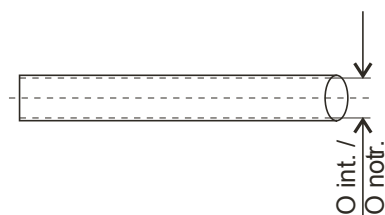
Delovna temperatura 300°C
 Kratkočasno 350°C
 Kompenzacijska žica tip J*
 *FeCuNi - rdeča&modra

Technical features:

Working temperature 300°C
 For a short time up to 350°C
 Compensation wire type J*
 *FeCuNi - red & blue

presek	Økončni	Tip termočlena	Koda
2x0,5	4,00	J / FeCuNi	200050
nomimal	Øfinal	Sensitive element	Code

GM.400 SILIKONSKA BUŽIR CEV / FIBERGLASS/SILICONE INSULATING SHEATHS



Silikonska bužir cev / Fiberglass/silicone insulating sheaths

Karakteristike:

Delovna temperatura 200°C
 Kratkočasno 250°C
 steklena vlakna
 Impregniran silikon / rdeč
 Prebojna trdnost 3kV

Technical features:

Working temperature 200°C
 For a short time up to 250°C
 Fiberglass support
 Silicone rubber impregnation / RED
 Dielectric strength 3kV

Ø mm	Koda	Ø mm	Koda
1,00	400001	4,00	400004
1,5	400015	6,00	400006
2,00	400002	8,00	400008
2,50	400025	10,00	400100
3,00	400030	12,00	400120
3,50	400035	14,00	400140
Ø mm	Code	Ø mm	Code

GM.101 INOX KABEL ČEVLJI / INOX CABEL CONTACT



Karakteristike:

Delovna temperatura 300°C

Kratkočasno 400°C

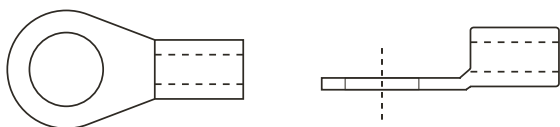
Material: AISI 0304

Technical features:

Working temperature 300°C

For a short time up to 400°C

Material: AISI 0304



Inox kabel čevlji / Inox cabel contact

Ø žica	vijak	Koda
0,5 - 1,5	M3 - M5	1011614
2,5 - 4,0	M3 - M5	1011210
Ø wire	screw	Code

NSB-4 PREVODNA MAST / CONDUCTIVE GREASE



Prevodna mast / Conductive grease

Karakteristike:

Izboljša prevodnost grelna

Max temperatura 1200°C

Priporočamo za grelna patrone

Pakirano 25 gram

Technical features:

Improves conductivity of heater

Max temperature 1200°C

Recommended For cartridge heaters

Packed in 25 gram

Ø žica	vijak	Koda
0,5 - 1,5	M3 - M5	1011614
2,5 - 4,0	M3 - M5	1011210
Ø wire	screw	Code

Supporting industry since 1963





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